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Improve Reliability-Interchange Service Experience

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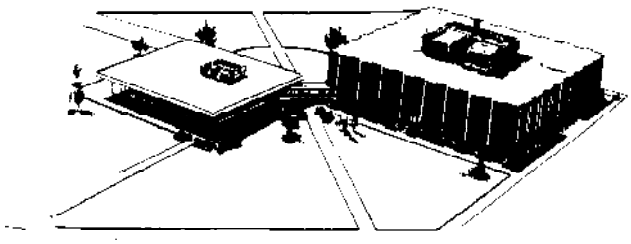
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590

GENERAL AVIATION AIRWORTHINESS ALERTS



FLIGHT STANDARDS SERVICE
Mike Monroney Aeronautical Center

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA;
ATTN: Designee Standardization Branch (AFS-640);
P.O. Box 25082; Oklahoma City, OK 73125-5029.

AIRPLANES

BEECH

Beech
Model F33A
Bonanza

Defective Fuel Selector Valve Screen
2821

It was reported that during flight, low fuel flow and high exhaust gas temperature (EGT) indications were experienced.

After extensive troubleshooting, the problem was found to be caused by an improperly assembled fuel selector valve screen. This aircraft was equipped with a wing fuel tiptank system installed in accordance with Supplemental Type Certificate (STC) SA41629. In accordance with this STC, a nonstandard fuel selector valve (P/N HE763) was installed. Due to the date of issuance of the STC (September 24, 1961) the "instructions for continued airworthiness" were not issued by the STC holder. However, the assembly instructions were originally printed on the fuel filter canister, even though they may have been obliterated since the original installation. The submitter stated that without these instructions, it is possible to incorrectly assemble the fuel screen, which will result in restricted fuel flow to the engine at higher power settings. The filter (or screen) assembly process is a very simple procedure involving only a few parts.

The STC holder issued assembly and inspection instructions via a revision to STC SA41629, dated April 23, 1992. The STC holder also issued an additional sheet which was made available to all original purchasers of the STC. (However, sometimes the updated publications cannot be delivered because the aircraft has been sold or otherwise changed ownership.)

Part total time not reported.

Beech Model F33A Bonanza — **Defective Instrument Air Filter 3610**

During a scheduled inspection, the in-line instrument air filter was found "heat damaged."

The filter (P/N RA1J4-7) was installed in the secondary pressure system. The submitter speculated the filter had been subjected to excessive heat from the engine exhaust system due to its location approximately 6 inches from the left exhaust stack. The clear plastic of the filter had melted and shattered into pieces. Small pieces of the plastic material or foreign objects could pose a blockage hazard to the instrument air system. The submitter stated that a filter with a metal canister is available from a different manufacturer.

Two reports were received which stated similar failures of the filter with this same part number.

Part total times-26 and 50 hours.

Beech Model H35 Bonanza — **Landing Gear Failure 3230**

The pilot stated that during a landing approach, a "down and locked" indication could not be attained when the gear lever was placed in the "down" position. Although the emergency extension system was used, the pilot could not confirm the cycle was completed prior to landing. During the afterlanding roll, the landing gear collapsed.

The aircraft "settled" on the main gear inner doors and the nose gear doors. This minimized damage to the aircraft, and there were no personal injuries. An investigation revealed the landing gear failed due to a malfunction of the landing gear motor (P/N 35-380094-3). When the motor was disassembled, the brushes were found "worn beyond limits." The landing gear motor brushes should be inspected during scheduled inspections and replaced long before they approach the "wear limit." A functional check of the landing gear system, including the emergency system, is also very important during scheduled inspections.

Part total time not reported.

Beech Model A36 Bonanza — **Landing Gear Malfunction 3200**

The pilot reported that when the gear was selected to the "down" position, the landing gear circuit breaker opened. The circuit breaker was reset; however, the landing gear still would not extend, and it was necessary to manually extend the gear.

An investigation disclosed that the circuit breaker (P/N CB2320A), located on the right lower instrument panel, failed internally. With the circuit breaker in the "reset" position, electrical power would not flow from one terminal to the other. It was suggested that the circuit breaker failure may have been caused by age and/or the number of cycles.

Part total time-6,219 hours.

Beech Model 58 Baron — **Fuel Control Security 7322**

During routine maintenance, the fuel control assembly was found loose.

Two of the three attachment bolts were missing, and the other bolt was loose. These bolts are intended to attach the fuel injection assembly to the throttle control lever (P/N 632554-24). Also, a shroud (P/N 646673) was found broken, loose, and chafing on fuel line fittings. Some of the fittings were chafed through more than half of their wall thickness.

The submitter speculated these defects were caused by improper installation of the throttle lever. Improper installation allowed the throttle lever to contact and exert pressure against the shroud assembly. The attachment

bolts sheared. This condition also restricted control lever travel. Extreme care and use of the proper technical data should eliminate this type of incident.

Part total time not reported.

Beech Model A90 King Air — **Wheel Failure 3246**

After landing, the left main landing gear outer wheel half (P/N 50-300010-109) failed as the aircraft was turning off of the runway.

The wheel half evidently blew off, hit the runway surface, bounced "up into the nacelle," and caused minor skin damage. The available evidence indicated the wheel half failed due to pre-existing cracks. The cracks originated at the valve stem hole, the inner circumference of the wheel half, and/or a dent on the outside rim area. This part was manufactured in January 1968. The submitter recommended that, in conjunction with scheduled inspections, these parts should be "paint stripped," and have a nondestructive inspection (dye penetrant or eddy current). These recommendations will allow early detection of cracks, and the chance of further damage could be prevented. Wheel halves which have been in service for long periods of time should be closely inspected.

Part total time-8,291 hours. Number of cycles-8,394.

Beech Model 100 King Air — **Window Failure 5610**

The pilot reported that approximately 15 minutes after takeoff, at 12,000 feet altitude, the pilot's left side window failed.

The window (P/N 50-420066-353) failure caused loss of cabin pressure. The pilot was able to make a safe emergency landing. The submitter stated the defective window was the "improved stretched acrylic type." The defective window was sent to the manufacturer for analysis.

At this time, no cause for this incident has been determined. If further information is obtained, it will be printed in a future edition of this publication.

Window total time in service-4,008 hours.

Beech Model B200 King Air — **Nose Landing Gear Door Security 5344**

During a scheduled inspection, the nose landing gear door hinge (P/N 50-820183-7) was found cracked.

The crack appeared to originate on the inboard side of the hinge lip at a rivet hole. The submitter speculated this defect was caused by the installation of a "Cherry Max Rivet (-4)" on the hinge lip. The hinge lip area is .75 inch wide. Apparently, this does not leave enough edge distance, and the assembly is weakened. The submitter suggested that the manufacturer re-design the hinge to have a "thicker lip area."

This suggestion and the report were sent to the responsible FAA aircraft certification office for appropriate action.

Part total time not reported.

Beech Model B200 King Air — **Main Landing Gear Bearing Failure 3213**

A catastrophic failure of the Number 2 main landing gear outer wheel bearing was discovered after the aircraft had been washed and was being lubricated.

Previous taxiing and towing of the aircraft appeared normal, and there was no indication of bearing problems. Due to "scoring of the race" and the complete destruction of the cage, it is believed that the bearing (P/N 13600-LA3685) cage assembly failed first. The bearing appears to have been properly lubricated, and there was no evidence of heat damage. The inner bearing was intact, fully lubricated, and displayed no signs of damage. The axle showed no signs of damage or excessive heat, and this was confirmed by a

dye-penetrant inspection. Sixty hours prior to failure, the bearing was cleaned and then lubricated with "Aeroshell #5" grease. The part total time was 350 hours.

Another report was received on a like aircraft. On this aircraft, air traffic control reported to the pilot that a wheel had departed the aircraft during takeoff. The aircraft was safely landed, and maintenance personnel were summoned. Inspection revealed the Number 3 main outer wheel bearing had failed. The wheel assembly slid over the axle nut and the cotter pin, and the brake line broke. The bearing cone was found seized on the axle which was severely galled. The part total time was 125 hours.

These bearings should be thoroughly inspected when they are received and when they are installed.

Beech
Model 200
King Air

Engine Exhaust
Defect
7810

During a preflight inspection, the pilot discovered a crack in the left engine exhaust stack (P/N 101-950019-1).

The crack was located at the flange area and was approximately 6 inches long. The submitter suggested that the exhaust stacks should be closely checked during preflight and postflight inspections. Beech has an improved exhaust stack (P/N 101-950022-1) which is available as a replacement part. The submitter stated the improved stacks have shown to be more durable.

Part total time-356 hours.

CESSNA

Cessna
Models 180, 185,
and 206 Series Aircraft

Cleveland Wheels
and Brakes
3246 and 3242

The tie bolt torque instructions were not included in Supplemental Type Certificate (STC) SA63GL and other Cleveland replacement wheel and brake STC's. Twenty-one service difficulty reports have been submitted to the FAA for the period from 1974 to 1997 for brake disk (P/N 164-03600) tie bolt holes which either cracked, pulled out, or broke. Cleveland reports over 10,000 wheel and brake assemblies (P/N's 40-75D and 164-03600) have been placed in service in accordance with STC SA63GL since 1974.

Cleveland Product Reference Memo PRM61, Revision A, dated 7-1-95 identifies the two-piece welded brake disk (P/N 164-03600) which has been superseded by a single-piece forged brake disk (P/N 164-03601).

Users and installers should be aware that the required torque, as listed on the wheel nameplate, plus the torque required to turn the nut, known as running torque, must be used in torquing the wheel tie bolts. Dry or Lubtork procedures must be followed or the tie bolt may be overtorqued or undertorqued. This condition may lead to loss of clamping torque, tie bolt hole distress, and ultimate failure during brake operation.

Cleveland is including a copy of PRM69, dated 2-1-97, in STC replacement wheel and brake kits. PRM69 provides available information on general maintenance and proper tie bolt torque procedures. PRM69 refers to Cleveland Component Maintenance Manual (CMM), "Off Aircraft Maintenance (section)," and Cleveland Memo PRM64, "Technicians Service Guide," which identifies the correct torque values and procedures for these assemblies. Copies of PRM64 and PRM69 may be obtained by contacting Cleveland Customer Support at 1-800-272-5464.

Cessna
Model 182N
Skylane

Rudder Stop
Bulkhead Cracking
5531

During a scheduled inspection, cracks were found in the upper left bulkhead flange radius

just above the mounting point for the rudder stop.

This subject is covered in Cessna Service Letter 72-3 and by Airworthiness Directive (AD) 72-07-09. The submitter speculated that this damage was caused by "years of rudder-stop contact." This would include times when the aircraft was parked on the ramp during gusty and/or high wind conditions. To stop wind damage, use the external control surface lock when the aircraft is parked outside.

Part total time-3,992 hours.

Cessna Model T210N Centurion — **Autopilot Attachment Failure 5550**

While preparing to repair a skin crack at Fuselage Station (FS) 166.4, an inspection revealed hidden damage. FS 166.4 is the location of the autopilot pitch servo (P/N ARC400B) attachment which the submitter speculated may have contributed to the following defects. The pitch servo installation had been accomplished by the aircraft manufacturer.

A "tear-shaped crack" was found on the outer skin, and two other cracks were discovered on the bulkhead at FS 166.4. The submitter stated that no doublers or reinforcements were used in conjunction with the pitch servo mounting, and this caused the defect. It was suggested that the manufacturer issue a "Service Bulletin" and kit to allow this area to be reinforced. The possibility of a hazard to flight control operation was cited by the submitter. This report has been sent to the responsible FAA aircraft certification office for appropriate action.

Part total time-2,230 hours.

Cessna Model T303 Crusader — **Main Landing Gear Failure 3230**

After takeoff, the pilot selected the landing gear to the "up" position. The gear retracted normally until the end of the cycle when an abnormal "banging" sound was heard. The gear was then extended, and only the right main gear and the nose gear attained the "down-and-locked" position. All attempts to extend the left main gear failed, and the aircraft was landed with the landing gear retracted. The landing was made with both engines feathered.

An investigation disclosed that the metering tube (P/N 2541083-5) inside the left main gear strut had broken at a machined hole in the shaft. This allowed the lower portion of the shock strut barrel to overextend and be pushed out of the upper barrel by the charge on the strut. The left gear was found "jammed" into the wheel well. The submitter recommended the metering tube and shock strut be checked using a nondestructive testing technique at some reasonable interval.

Part total time-10,142 hours.

Cessna Model 310R — **Elevator Bellcrank Support Failure 2730**

During a 100-hour inspection, excessive free play was found at the elevator control surface.

Further investigation revealed that the elevator bellcrank pivot bolt holes were elongated where they pass through the bellcrank support brackets (P/N's 0814000-10 and -11). These support brackets were located at the "most aft" empennage bulkhead. The pivot bolt holes were elongated approximately .75 inch. The submitter believed this defect was caused by misrigging of the elevator control system and excessive cable tension. It was suggested that the manufacturer issue technical data to allow reinforcement of the support brackets.

Part total time-5,640 hours.

Cessna Model 310R — **Nose Baggage Compartment Fire 2140**

During ground operation, smoke and fire were observed coming from the nose baggage compartment. All aircraft systems were shut

down, and the aircraft was evacuated. The fire was brought under control, and damage was confined to the aircraft nose section.

An investigation disclosed that the heater fuel supply line failed, the fuel ignited, and the fire was intensified by additional fuel. The fire subsided when the system was shut down. In this case, the heater was a Stewart-Warner, Model 8259JR2. Examination of the fuel supply line (P/N 0800400-239) revealed it failed due to corrosion. The submitter stated the heater assembly was in good condition. Airworthiness Directive (AD) 81-09-09 requires inspection of this area on the basis of "heater operating time" instead of the basis of "calendar time." The heater had been operated approximately 19 hours since the last compliance with AD 81-09-09, but many years had elapsed over the accumulation of 19 hours of operation. The submitter recommended that the AD be revised to make required inspections using the basis of "calendar time." The AD does not prohibit inspection on the basis of "calendar time." It was recommended that operators establish a reasonable schedule, based on "calendar time" for inspections in accordance with the AD, in addition to the heater operating time inspection requirements of the AD.

Part total time-2,665 hours.

Cessna Model 401A — **Rudder Torque Tube Failure 2720**

The aircraft was in for maintenance due to a report of ineffective left rudder action.

An inspection revealed the rudder cable attachment fitting was torn loose from the left rudder bar torque tube assembly (P/N 5015006-8). The cable attachment fitting separated from the torque tube adjacent to a weld. A "magnaflux" inspection of the right torque tube assembly (P/N 5015007-5) disclosed a crack at the same location. The cause of these defects was determined to be "gusty" wind conditions on the rudder surface with the cockpit rudder control lock (P/N's 5215027-1, -11, and -13) installed. The submitter stated wind forces can exert excessive stress on the rudder torque tube which was transmitted to the failure point in this case. One of the problems in detecting this defect is that the location is not easily accessible. A great deal of labor is involved in removing the torque tube for proper inspection. The submitter recommended that the FAA issue an Airworthiness Directive (AD) to require inspection and repair/ replacement of these parts. This defect can be eliminated by the use of an external control lock on the rudder control surface.

This information and report were sent to the responsible FAA aircraft certification office for appropriate action. This defect may occur in many other models of Cessna twin engine aircraft; therefore, this problem deserves your attention at the earliest possible opportunity.

Part total time not reported.

Cessna Model 425 Conquest — **Wing Flap Split 2750**

During a landing approach, the pilot selected "full" flaps. A loud, abnormal noise was heard as the flaps approached the "full-down" position. At the same time, the aircraft rolled violently to the right. The wing flaps were immediately retracted, control of the aircraft was regained, and a safe landing was made.

The right wing flap was found loose and hanging down. An investigation disclosed that the right flap extend cable (P/N 5000008-02) was broken at the "preselect" cable attachment point. The flap gear box was severely damaged, and the limit switch actuating arm was broken. All of the flap push rods were bent. The submitter speculated that the push rods were bent during retraction of the flaps. The submitter did not offer a cause for this defect. Maintenance personnel and operators are urged to thoroughly inspect, repair, and maintain the wing flap system in accordance with the manufacturer's technical data.

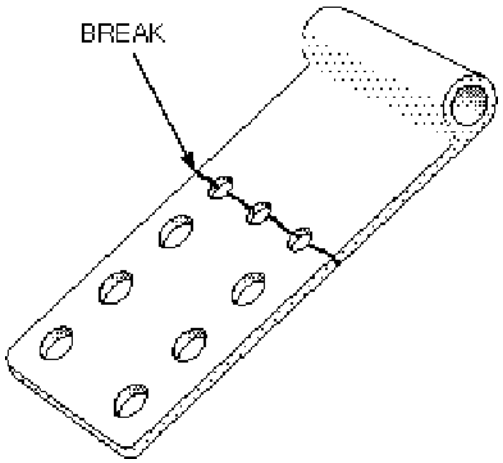
Part total time-3,049 hours.

Cessna Model 441 Conquest | **Broken Cabin Door Hinge 5210**

The lower cabin entrance door failed as a person of moderate weight was exiting the aircraft.

During an investigation, the lower cabin door aft hinge (P/N 5111515-15) was found broken. It appeared the hinge had suffered a previous partial crack as indicated by a dark fracture surface which extended from one edge of the hinge through the nearest rivet hole. This door installation had been modified in compliance with Service Bulletin (SB) PJ81-21. SB PJ81-21 adds three rivets to the six original fastener pattern. (Refer to the following illustration.)

Part total time-4,781 hours.



Cessna Model 560 Citation | **Rudder Skin Crack 5542**

During a scheduled inspection, a crack was found in the rudder skin.

The crack was approximately 3 inches long and extended through three rivet holes. The defect was located on the right side of the rudder skin (P/N 5533000-54) along the aft rib at water line (WL) 58. The submitter stated this was the eighth occurrence of this defect found in the operator's fleet. Operators and maintenance personnel using like aircraft are urged to pay special attention to this area during inspections and maintenance.

Part total time-649 hours.

DASSAULT-BREGUET

Dassault-Breguet Model Falcon 10 | **Wing Flap Malfunction 2750**

The pilot informed the maintenance personnel that the wing flap circuit breaker "popped" when the flaps were operated. The circuit breaker was reset, and the system functioned properly for the remainder of the flight.

A thorough investigation on the ground could not duplicate the defect, and the aircraft was returned to service. Ten days later, the incident happened again. Still, the defect could not be duplicated on the ground. The aircraft was moved into a hangar and the wing flap reduction gear motor (P/N AUIAC6014-4) was disassembled. A setscrew (P/N ATQED 040005UL) and nut (P/N 936-003) were found loose and lying in the bottom of the housing. There was damage to the clutch springs and other signs of contact inside the gear box. The submitter did not offer a cause for the loose parts. Evidently, binding in the gear box assembly, caused by the loose parts, produced an electrical overload on the control circuit. The gear box assembly has a "time before overhaul" (TBO) of 2,400 hours.

Part time since overhaul was 1,107 hours.

GLOBE SWIFT

Globe Swift Model GC-1B | **Wheel Brake System Failure 3242**

The following article contains information which may be helpful to owners of this and other makes and models of general aviation aircraft.

After approximately 3 years of storage, the aircraft was inspected and returned for service. Very severe directional control problems were encountered during ground operations.

It was determined that the problem was related to the wheel brake system. The aircraft had retractable landing gear and a nonsteerable tailwheel which required proper wheel brake action for directional control. When one of the flexible brake lines was disconnected from the wheel cylinder and brake pressure was applied, a "gooey" substance was excreted from the line. This substance was originally MIL-5606 hydraulic fluid which had congealed. The congealed hydraulic fluid caused a delay in braking action when pressure was applied and a corresponding delay when the pressure was released.

This problem may affect any aircraft with a hydraulic brake system which has been stored for a long period of time. It may also be present in other aircraft systems using a hydraulic system for actuation.

Globe Swift
Model GC-1B

Landing Gear Malfunction
3230

While an annual inspection was being conducted, the left main landing gear jammed at approximately midtravel during a retraction test.

The short landing gear extension cable (P/N 11-532-3054-2) was kinked and caused this malfunction. The cable was severely corroded and was abnormally stiff. The submitter suggested that "older" aircraft be closely inspected for this type of defect during scheduled inspections. This particular cable was approximately 50 years old!

Part total time not reported.

LAKE

Lake
Model LA 4-200
Buccaneer

Hydraulic Hose Leaks
3230

When the aircraft landing gear hydraulic system developed several leaks, a new hose kit (P/N 180000-5) was ordered from the manufacturer and installed.

Two of the six hoses leaked profusely during the first retraction test. The leaks originated at the hose end fittings. When the lines were removed and disassembled, the fittings were found improperly installed. The ferrules were attached to the hose by only one thread instead of three. The inside fitting was apparently installed without the proper tool, and the tool cut the inside of the hose. The hose stock used was from Aeroquip and the fittings were MS24590-4.

Part total time-.6 hours.

LEAR

Lear
Model 35A
Centry

Defective Aileron Balance Tab Push Rod
2710

During a postflight inspection, a small "paint blister" was found on one of the left aileron balance tab push rods (P/N NAS358-60-900).

The "paint blister" was located at the bottom center and approximately 3.5 inches forward of the aft rod end bolt center. When probed, the "paint blister" opened to reveal a hole through the tube wall thickness. The hole was approximately .25 inch long and .125 inch wide. Inspection through the hole disclosed severe corrosion inside the tube. The corrosion products fell out of the hole when the tube was shaken. Both of the rivets used to plug the corrosion treatment holes were still in place and were secure. The source of the corrosion-producing contaminates, which

acted on the inside diameter of the tube, could not be determined. The remaining aileron balance tab push rods were inspected, as well as those on another like aircraft, and no damage was found. Wisely, this operator chose to replace all of the push rods on both aircraft.

Part total time-3,951 hours.

PIPER

Piper
Model PA 23-250
Aztec

Engine Compartment Fire
2822

During takeoff, the pilot experienced an engine compartment fire. The takeoff was successfully aborted, and the fire was extinguished.

An investigation disclosed that the fuel pump (P/N RG17980J) was leaking at the "case to pump" seam. The fuel spray was directed onto the turbocharger, and this was determined to be the cause of the fire. The fuel pump gasket flange appeared to be the leak source.

Part total time-1,100 hours.

Piper
Model PA 24-250
Comanche

Unserviceable Fuel Hoses
2820

During an annual inspection, all of the flexible fuel hoses in the engine compartment were found to be unserviceable.

None of the hoses were leaking; however, all of the hoses were very stiff and brittle. It appeared these hoses were installed as original equipment when the aircraft was new. This aircraft was manufactured in 1963. The hose identification tags indicated they were manufactured in 1962. That was 35 years ago, and is entirely too long to expect a flexible hose to remain functional! Owners, operators, parts distributors, maintenance personnel, and anyone else that may have knowledge of outdated hoses are strongly urged to check and change these hoses before they cause a catastrophic accident.

Aircraft total time-2,884 hours.

Piper
Model PA 28-140
Cherokee

Seat Rail Corrosion
2510

During an annual inspection, severe corrosion was discovered on the pilot's outboard seat rail.

The corrosion was located under the "lip" of the seat rail (P/N 62557-004) and had affected the floor structure and the rail. The submitter believed this damage was caused by water, and possibly other contaminates. The water was trapped by the carpeting and was held in contact with the seat rail and floor panel. The submitter described the aircraft carpeting as "home-type shag carpet." It was speculated that moisture originated from the feet and clothing of occupants, and during humid weather conditions. The submitter recommended that the seat rails be inspected for corrosion as frequently as possible, and that the carpet be kept as dry as possible. Also, it would be wise to replace any "nonstandard" carpeting.

Part total time-3,298 hours.

Piper
Model PA 28RT-201T
Turbo Arrow

Alternator Drive Coupling Failure
2410

During a scheduled inspection, the alternator drive coupling (P/N 635796) was found defective.

The drive coupling is constructed of rubber which is bonded to the shaft and the outer housing to dampen vibrations. The rubber had separated from the outer housing. The submitter stated this was the second failure on this aircraft and the third failure discovered by this repair station in the past 12 months. It was suggested that the manufacturer consider going back to the previous design which used (magneto style) drive blocks.

It was inferred that the rubber bonding does not endure the operational environment very well.

Part total time-268 hours.

Piper **Annunciator System**
Model PA 31T **Failure**
Cheyenne **3110**

After starting the engines, arcing and smoke came from under the "glare shield."

An inspection disclosed that the wire bundle containing the annunciator system wiring had chafed on the "glare shield." The "A+" wire insulation had been penetrated, and the bare wire shorted to ground. The wire bundle was "unprotected" at the feed through, and grommets had not been installed in the instrument panel. The short circuit also caused the annunciator control box to smoke and become inoperative. The submitter stated there is no circuit protection between the annunciator control box and the control panel.

Part total time not reported.

Piper **Crew Door Opened**
Model PA 31-350 **In Flight**
Chieftain **5210**

The crew entrance door opened in flight, and the pilot was not able to get it closed. A safe landing was made, and the aircraft was delivered to maintenance.

An inspection of the door assembly disclosed that the upper latch actuating rod (P/N 44633-02) broke; the upper latch disengaged and caused the door to open. The submitter stated: "The rod should be made of thicker stock or stronger material." No other cause for this defect was given.

Part total time not reported.

Piper **Turbocharger**
Model PA 31-350 **Security**
Chieftain **8120**

During a scheduled inspection, two of the turbocharger mount bolts were found loose. The lower inboard and outboard bolts were loose, and the submitter stated this is a common occurrence. The bolts usually become loose after approximately 100 hours of operation. The submitter recommended the "course-threaded" bolts (P/N LN31S4.44) be replaced with a "fine-threaded" bolt using a locknut. This recommendation has been sent to the responsible FAA aircraft certification office for appropriate action.

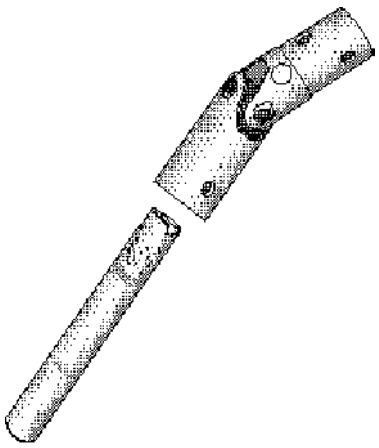
Part total time not reported.

Piper **Control Yoke Defect**
Model PA 32-300 **2701**
Cherokee Six

In the process of replacing the flight control column universal joint (P/N 62834-02), the shaft was found "misdrilled."

The control column shaft (P/N 62716-xx), which fits into the universal joint, was apparently improperly drilled during manufacture. The improperly drilled hole is used to attach the shaft to the universal joint. The hole was drilled at the end of the shaft with approximately half of the hole being in the metal and the other half exposed. (Refer to the following illustration.) The submitter cautioned operators to check the "feel" of the control yoke and have any abnormality investigated by maintenance personnel.

Part total time-6,000 hours.



Piper
Model PA 34-200T
Seneca

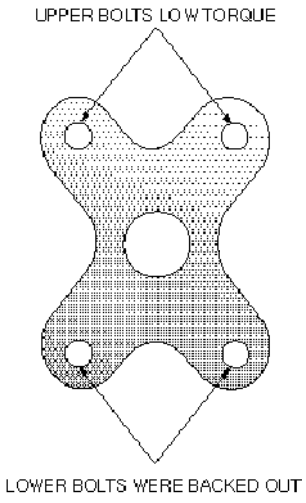
Main Landing Gear
Defect
3211

During a scheduled inspection, the right main landing gear forward trunnion plate was found to have excessive wear at the four attachment points.

The bolts (P/N AN4-10A) used to secure the trunnion plate (P/N 67040-13) to the aircraft structure were loose, and the lower two bolts backed out. (Refer to the following illustration.) All four attachment holes in the trunnion plate had been elongated due to the loose fasteners. At the time of this inspection, the two upper bolts had not backed out; however, they were well below the prescribed torque value. Piper Service Bulletin (SB) 956, Part 2, had been complied with. Part 1 of SB 956 requires a recurring check of the bolt torque at 100-hour intervals. Part 2 of SB 956 terminates the recurring torque check by enlarging the four holes to accommodate a larger bolt (P/N AN5-10A). Refer to SB 956 for specific instructions.

The submitter recommended that all trunnion plate attachment bolts be checked for proper torque, bolt or plate wear, and security during scheduled inspections.

Part total time-4,090 hours.



HELICOPTERS

AMERICAN EUROCOPTER

American Eurocopter
Model AS350BA
Ecureuil

Tail Rotor Hub Bolt
Hard To Remove
6420

While removing the tail rotor hub, it was noted that the hub retaining bolt was very difficult to remove. Upon further inspection it was discovered that there were signs that the bolt had been coated with “Red Loctite” instead of “Blue Loctite 242.”
MWC 65.20.00.401, paragraph 4, states that “Blue Loctite 242” is to be applied to the hub retaining bolt threads just prior to installation.

The submitter spoke with an employee of a major helicopter repair station. According to the repair station employee, 80 percent of the tail rotor gear boxes they overhaul/repair have “Red Loctite” instead of “Blue Loctite 242.” The submitter stated that this goes against the aircraft manufacturer’s overhaul/repair procedures.

Part time since overhaul-102 hours.

BELL

Bell
Model 206L3
Long Ranger III

Skid Tubes Cracked
3213

Information for the following article was furnished by the FAA’s Flight Standards District Office located in Baton Rouge, Louisiana.

Cracks were discovered during the skid tube daily inspection. The cracks extended through two of the Rivnut holes for the first skid shoe (P/N 206-324-003) aft of the forward cross tube. The operator reported that this is the fourth skid tube that they have found cracked in this same area.

(Note: All of the skid tubes found cracked were not manufactured by Bell Helicopter. This skid tube was produced by Aeronautical Accessories under a PMA.)

Part total time-986 hours.

Bell
Model 222U

Tear In Horizontal Stabilizer
5342

A tear was discovered on the right inboard side of the horizontal stabilizer during a routine inspection. The submitter stated that the damage was probably caused by improper installation. The damage was repaired as per the manufacturer's instructions, and an FAA Form 337 was filed for this particular aircraft. The submitter further stated that a "NOTE" in the installation instructions of the maintenance manual could possibly prevent others from repeating this same mistake.

Part total time-1,371 hours.

ENSTROM

Enstrom
Model F28F
Falcon

Mounting Webs For Control Rod Bushings And Universal Joint Of Lower Swashplate Cracked
6230

Four Malfunction or Defect Reports (M or D's) were submitted by this operator. These M or D's described an ongoing problem with swashplate cracking. The mounting webs for the control rod busings and universal joints of the lower swashplate seem to crack frequently. This is a primary flight control part with a retirement life of 17,700 hours. The submitter stated there were problems with all four of the universal housings (P/N 28-16119-1). These housings were nonrepairable and had to be returned. This part number is installed on all Enstrom aircraft with the exception of the TH-28 and 480 models.

The submitter stated that Enstrom issued SDB 0088 on May 28, 1997. SDB 0088 covers inspection and possible rework to these cracked areas. The submitter recommended that SDB 0088 be taken a step further by removing the swashplate and performing a "zyglo" inspection on P/N 28-16119-1 in lieu of the recommended visual inspection due to the fact that some cracks were not "visually" evident.

The four most recent universal housings have had 641, 3,710, 6,672, and 8,780 hours at the time of failure.

McDONNELL DOUGLAS

McDonnell Douglas
Model 369E
500E

Trim Switch Inoperative
6710

While in normal flight, the trim system continued to drive the left lateral cyclic stop. Attempts to bring the trim back to the neutral position were unsuccessful using both the pilot's and copilot's trim switches. The system circuit breaker was pulled to prevent any further problem. The aircraft was flown back to the home field.

The submitter stated that great force was exerted to overcome the trim-spring capsule in the process of flying the aircraft back to the home field. Maintenance personnel replaced the pilot's trim switch, and the circuit breaker was reset. All ground and flight tests "checked good." A query of Service Difficulty Reporting (SDR) data base showed that there had been seven other incidents of trim switch failures. Including this failure, there was an "average hours at failure" of 350 hours.

Part total time-86 hours.

McDonnell Douglas Model 396D (Hughes 500D) Engine Allison 250-C20

Fuel Nozzle Filter Screen Restricted 7313

Information for the following article was furnished by the FAA's Flight Standards District Office located in Honolulu, Hawaii.

On January 12, 1997, a McDonnell Douglas 369D (Hughes 500D), incorporating an Allison 250-C20, crashed due to fuel starvation. The fuel starvation appears to have been caused by contamination which collected on the fuel nozzle filter screen, thus restricting the flow, and subsequently collapsing the filter screen under high engine power settings. These power settings require higher fuel pressure and volume. The screen (P/N 5233414) was a 104-micron mesh filter.

In the past 3 years, there have been three Hughes 500 accidents due to a collapsed nozzle filter (P/N 5233414), and one crash was fatal. All three of these accidents were in the Hawaiian Islands. The fuel nozzle screens were impregnated with a potassium/silicone residue on the inlet side of the filter screen.

None of these three helicopters had a "fuel pump filter bypass indication" when they were clogged. The three helicopters were flown on and off their home base airport, occasionally refueled at field sights, and subjected to a corrosive and volcanic environment which required daily engine flushes.

A ramp inspection of these helicopters revealed the following. One helicopter had a filter screen (P/N 5233414) installed in the fuel nozzle with approximately 800 hours of total time, and there was an approximate 10 percent buildup of contamination. Another helicopter had a filter screen (P/N 47086) installed with approximately 700 hours of total time, and there was no visible contamination. When the supply of filter screen (P/N 5233414) is exhausted, the replacement screen is (P/N 47086).

All three helicopters were serviced and fueled by the same vendor. The submitter stated that the McDonnell Douglas maintenance manual does not require a periodic inspection for either screen; however, the manual does require an inspection for checking the screen for contamination if the fuel bypass light illuminates.

The submitter recommended that operators verify the part number of the fuel nozzle filter screen installed in their aircraft. If the filter screen is (P/N 5233414), it should be replaced with (P/N 47086). There should be at least a 300-hour visual inspection of the 104-micron fuel nozzle filter screen for contamination and serviceability.

Part total time not reported.

AGRICULTURAL AIRCRAFT

GRUMMAN

Grumman Model G-164D Ag Cat

Erratic Fuel Quantity Indications 2841

The pilot reported that the fuel quantity indicator was erratic.

An investigation determined that the float arm was extremely stiff and difficult to operate. The cause was found to be the bearing/bushing, on the lower gauge shaft, which was too tight. This condition would cause the fuel quantity gauge to stick at various positions when the fuel tank was empty.

Part total time-105 hours.

AMATEUR, SPORT, AND EXPERIMENTAL AIRCRAFT

LONG-EZ

Long-EZ

Propeller Split 6110

While the aircraft was in stable flight at 7,500 feet MSL and smooth air, the wooden

propeller came apart. The separation occurred lengthwise down one blade of the two bladed propeller. Prior to the separation, there was no sign of any object striking the propeller. The breakage occurred lengthwise down the blade midway between the leading and trailing edges. The break did not follow along any laminated pieces of wood.

Part total time not reported.

LYCOMING

Lycoming Model IO-540*

Spark Plug Wiring Harness Nut Seizure 7421

This report was received from an amateur aircraft builder who had installed a Textron Lycoming Model IO-540 engine in his aircraft.

The engine ignition wiring harness nut, used to attach the harness to each spark plug, was found seized to the spark plug threads. It was necessary to hold the wiring harness ferrule in order to remove the nut from the spark plug. The submitter speculated the nut was "plated" too heavily during manufacture which caused "galling" when the nut was installed. Also, during installation of the nut, it is possible that particles of the plating could be shaved off and fall into the spark plug ceramic opening. It was recommended that all operators and builders closely examine the wiring harness nuts to ensure they will function properly. The use of "anti-seize" compound during installation is recommended.

Although this problem occurred on an experimental built aircraft, it may be applicable to any new wiring harness installation.

Part total time-130 hours.

NORTH AMERICAN

North American Model SNJ-5 Texan

Landing Gear Failure 3230

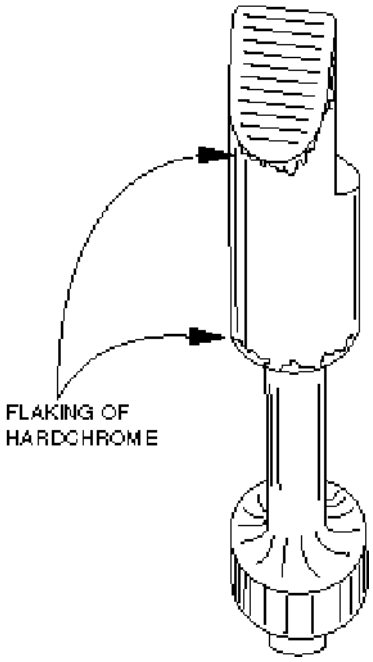
Information for this article was furnished by Mr. John H. Lane, Jr., of Jerome, Idaho. Mr. Lane is employed by Airpower Unlimited.

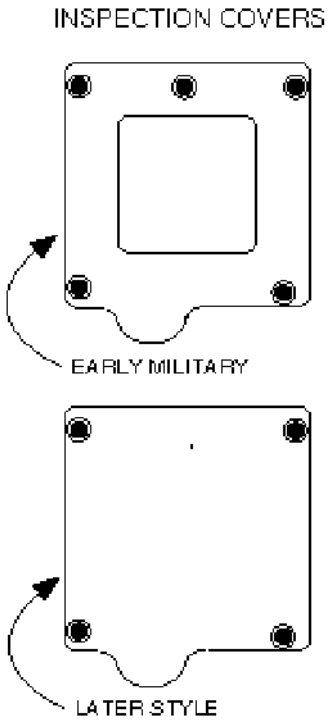
After the third flight of the day, the aircraft was stopped on the taxi way and the wing flaps were retracted. Then while the aircraft was "S-turn" taxiing toward the parking ramp, the left main landing gear collapsed.

An inspection revealed the lockpin (P/N 55-33525) was retracted. The right main landing gear lockpin was found fully in the locked position. An examination of the left main gear lockpin disclosed it was slowly working its way toward the locked position. Later, when the aircraft was moved into a hangar and placed on jacks, the left gear locking mechanism functioned properly. After removing the lockpin and spring, small flakes of what appeared to be hard chrome were found around the aft housing bore and locking pin.

The submitter stated that in the morning before these flights, the aircraft had been taken out of a warm hangar and was then subjected to flight altitude temperatures as low as -20 degrees Fahrenheit. Although proper lubrication was present, it was speculated the temperature differential may have contributed to this failure. There was no mention of moisture on or in the area of the locking pin which could have frozen the pin into the "retracted position." (Refer to the following illustrations.)

Part total time not reported.





VARIEZE

Varieze **Modified Cockpit Air Intake 2150**

The cockpit fresh air intake, located on the nose section of the aircraft, had been sealed off with “masking tape.” This was done to prevent airflow to the cockpit while operating in a cold environment. The operator found that when the aircraft landing light door was opened, an unknown amount of “fresh air” was supplied to the cockpit.

On one occasion, when the aircraft was on a trip to a warmer climate, the cockpit fresh air intake was still blocked with masking tape. For some unknown reason, the landing light was left closed. The lack of oxygen effected the pilot and the passenger during this flight.

The aircraft operator may have temporarily improved the temperature comfort of the cockpit; however, was it worth the consequences? This type of MODIFICATION can have fatal results. All builders and operators are cautioned to thoroughly investigate the consequences of their actions when changing any design or modification.

Part total time not reported.

ZENAIR

Zenair Model CH-2000 **Main Landing Gear Brake Assembly Failed 3240**

While a student was being given taxiing instructions, the right main landing gear brake assembly failed. Inspection of the brake pressure determined that the 0.25 nylon tube (clear) had a bubble forming in the line and had ruptured at that point. The submitter stated that during taxi instruction, it is believed that the student maintained too much pressure on the right brake causing the brake disk to build up excessive heat which was

transferred to the nylon line. This line is routed in close proximity to the disk. Also, this particular aircraft has wheel fairings installed making preflight inspection of these lines very difficult. The submitter further stated that this brake line is similar to that used on other amateur aircraft.

Part total time-86 hours.

PROPELLERS AND POWERPLANTS

HAMILTON STANDARD

Hamilton Standard Model 12D40 — **Blade Failure 6111**

This propeller was installed on a Pratt & Whitney Model R1340 engine in a Grumman Model G164B aircraft.

During the takeoff roll, a propeller blade separated from the hub. The pilot was able to abort the takeoff and stop the aircraft.

The Number 2 blade had broken inside the propeller hub. The manufacturer of this propeller has established a "time before overhaul" (TBO) of 1,000 operating hours. The TBO had been exceeded. The submitter recommended that all propellers be removed for overhaul at or before the manufacturer's established TBO has been met.

Part total time-1,117 hours.

ALLISON

Allison Model 250-C20 — **Possible Defective Oil Seals 7260**

Approximately 3 hours after engine installation, an oil leak was found in the area of the "starter-generator." The leakage rate was 12 drops per minute.

The "starter-generator" was removed, and the seal (P/N A6854424) was found half way out of the seal bore. During the prior engine installation, this seal was installed, inspected, and verified to have been properly installed. The seal was removed, and the outer diameter was measured at three separate depths on the metal band. Each measurement was found to be less than the minimum required by the engine manufacturer. The submitter recommended that all seals (P/N 6854424) be measured for proper dimensions prior to installation.

Part total time-3 hours.

TELEDYNE CONTINENTAL

Teledyne Continental Model IO-520-D — **Cylinder Stud Failure 8530**

This engine was installed in a Cessna Model A185F aircraft at the time of this failure.

Approximately 10 minutes after takeoff, the pilot both heard and felt an abrupt change in engine performance. A successful landing was made at the departure airport.

An inspection disclosed that all eight studs on the Number 4 cylinder had sheared. This cylinder had separated from the engine case approximately .5 inch. A review of the maintenance records revealed this engine had a "propeller strike" in its history, and the engine had been disassembled 460 hours prior to this occurrence.

Cylinder total time-779 hours. Engine total time-2,433 hours.

TEXTRON LYCOMING

Textron Lycoming Model O-235-L2C — **Poor Engine Performance 8530**

At the time of this occurrence, this engine was installed in a Cessna Model 152 aircraft.

This aircraft was delivered to maintenance with a report of poor engine performance.

During a check of the valve clearance, the Number 2 cylinder exhaust valve was determined to have a clearance of .083 inch. When the push rod (P/N 73806) was removed, it was found to be "mushroomed," and the ball end was loose. The submitter suggested inspecting all push rods for loose ball ends any time valve clearance is found greater than the allowable limit and when low engine power is reported.

Part time since overhaul-1,892 hours.

Textron Lycoming Model O-320-H2RD — **Catastrophic Engine Failure 8520**

This engine was installed in a Cessna Model 172 aircraft at the time of this failure. Just after takeoff, a catastrophic engine failure was experienced. The pilot had sufficient altitude to glide back to the departure airport.

An inspection revealed that a cylinder (number not identified) had completely separated from the engine case. The remaining pistons, rods, and crankshaft were destroyed. After disassembly, the cause of this failure was determined to be a broken piston pin (P/N SL-13444-1). (The piston pin broke approximately in the middle.)

Part time since overhaul-700 hours.

AIR NOTES

EAA OSHKOSH '97

Once again, the Experimental Aircraft Association (EAA) will host the annual aviation celebration known as Oshkosh '97. This event is known around the world for its excellence, size, number of attendees, number of aircraft, as well as many other statistical categories. This year Oshkosh '97 will begin on July 30 and end on August 5. It will be held at the Wittman Regional Airport in Oshkosh, Wisconsin.

The Oshkosh community has always been very gracious in its acceptance of the large number of people who fill the hotels and eating establishments for weeks before and after the airshow and convention.

Officials from EAA, FAA, and virtually everyone having an interest in aviation will be present to answer questions and present information to the public. Throughout the event, information will be provided using forums, seminars, and workshops. Manufacturers, vendors, and other groups will provide the opportunity to view and buy both new and existing aviation products of all kinds. Whatever your aviation interest may be, there will be many items which will grab your attention and possibly spark a new idea.

The staff of this publication will occupy a booth in the FAA hangar to provide handout material and answer questions concerning the Service Difficulty Reporting (SDR) program. The SDR program has many products and benefits which are available to the public. Many of the SDR program products are free, and others have a nominal cost to cover the printing and mailing charges.

We hope to see you!

APPROVED PARTS SEMINARS

The Designee Standardization Branch, AFS-640, had previously presented an Approved Parts Seminar. However, the FAA convened a task force to conduct a thorough review of the Suspected Unapproved Parts (SUP) issue, and the seminar was discontinued until the review was completed. As a result of the task force recommendations, a new national SUPs Program Office, AVR-20, was established to standardize national policy. Now that standard policy is completed, the Approved Parts Seminar will again be presented by AFS-640.

Attendance at these seminars is open to everyone in the aviation community; however, the material and content is mainly directed to Representatives of the Administrator, both foreign and domestic; FAA inspectors; Civil Aviation Authority (CAA) representatives; aircraft engine and propeller manufacturers; parts manufacturers; distributors; suppliers; air carriers; mechanics; and repair stations. It is expected that the seminars will be approved to be used as an acceptable means of renewal for Inspection Authorization (IA). The seminars can also be used as acceptable training in conjunction with the Aviation Maintenance Technician Award.

The major areas which will be covered in these 8-hour seminars are: type design, conformity, different methods to obtain approval on parts that are eligible for installation on U.S.-type certificated products, quality systems, and examples of litigation as a result of the installation of fraudulent/unairworthy parts.

The seminars are tentatively scheduled to begin after October 1997. You may contact AFS-640, your local Flight Standards District Office (FSDO), or your local Manufacturing Inspection District Office (MIDO) for a schedule of seminar locations. The seminar schedules will also be available on the Internet. The Regulatory Support Division, AFS-600, has established a "HomePage" at the following Internet address:

http://www.mmac.jccbi.gov/afs/afs600

CRITTERS

An article entitled "Spring is Coming!" appeared in the May 1997 edition of this publication. The article concerned the prevention and/or eviction of "critters" from your aircraft. In the article we stated: "If you discover a method that works, send it to us, and we will publish your method in this publication."

One of our readers, Mr. Richard Collins of Portola Valley, California, replied to our request with the following method for the prevention and/or eviction of "critters" from your aircraft.

> "One thing that seems to work fairly well is moth balls. They can be put in a plastic container, such as a used margarine container, punched full of holes and placed in the cockpit, tail cone, and in each wing."

We cannot attest to the success of this method; however, it may work very well. If you do try this method, make sure that all of the containers are removed before flight. A red streamer attached to each container and "left in view" may be a good reminder.

Our thanks to Mr. Collins for submitting this information. Now, he has told the 27,000 + readers of this publication about this "novel" idea. If anyone else has a different solution or idea, please send it in so we can tell everyone.

AIRWORTHINESS DIRECTIVES (AD'S)

AD'S ISSUED IN MAY 1997

AD 97-09-08	Nomad Models N22S, N22B, and N24A require inspecting control wheel subassemblies for cracks.
AD 97-09-09	Beech (Raytheon) 58P and 58PA require inspecting right hand upper and lower longerons.
AD 97-10-05	Jetstream HP137 Mk1, Jetstream series 200, Jetstream 3101 and 3201 require inspecting MLG pintle.
AD 97-10-10	Nomad N22 and N24 series require replacing attachment fittings of upper fin rear spar and fin/horizontal stabilizer.

AD 97-10-13 Fairchild SA226 and SA227 series require elevator torque tube inspection.

AD 97-10-14 Beech (Raytheon) 1900D requires inspection stabilon attachment angles.

AD 97-10-15 Sikorsky Model S-64F helicopters require inspection of main gearbox second stage lower planetary plate.

AD 97-10-16 Hiller UH-12, UH-12A/B/C/D/E, CH-112, H-23A, H-23B, H-23D, H-23F, HTE-1, HTE-2, and OH-23G helicopters require blade spar tube or cuff installed.

AD 97-11-04 Bell 412 and 412EP helicopters require creation of component history card.

AD 97-11-11 Nomad N22B, N22S, and N24A require inspecting horizontal stabilizer upper and lower skin.

AD 97-11-12 Nomad N22B, N22S, and N24A require inspecting stub wing upper front spar cap flanges for cracks.

AD 97-11-13 Fairchild Aircraft SA226 and SA227 airplanes require modifying electrical power generation system.

AD 97-12-02 Priority letter for McDonnell Douglas MD900 helicopters requires inspection of link assembly.

CORRECTION: AIRLINE SUPPLIERS ASSOCIATION CONFERENCE

An article, under the above title, was published in the June 1997 edition of this publication. In that article the telephone number given was incorrect. The correct number is (410) 715-9300. Our apologies for any inconvenience this error may have caused.

ALERTS ON LINE

We have received several requests to make the information contained in AC 43-16, General Aviation Airworthiness Alerts, available electronically. Therefore, this publication is now available through the FedWorld Bulletin Board System (BBS), via the Internet.

You can access the FedWorld BBS directly at telephone number (703) 321-3339. To access this publication through the Internet, use the following address.

http://www.fedworld.gov/ftp.htm

This will open the “FedWorld File Transfer Protocol Search And Retrieve Service” screen. Page down to the heading “Federal Aviation Administration” and select “FAA-ASI”. The file names will begin with “ALT”, followed by three characters for the month, followed by two digits for the year (e.g. “ALTJUN96.TXT”). The extension “TXT” indicates the file is viewable on the screen and also available to download.

Beginning July 1996, we are using the Adobe Acrobat software program format to upload this monthly publication. This change is necessary to include the illustrations which are associated with various articles. The file names will still begin with “ALT”, followed by three characters for the month, followed by two digits for the year; however, the extension will be “PDF” (e.g. “ALTJUL96.PDF”). The extension “PDF” indicates it will be necessary to download the files for viewing. The Adobe Acrobat Viewer is available for download from the Internet (free of charge) and will allow the files to be read.

You can still access the “TXT” extension for issues of this publication prior to July 1996.

Also, available at this address are the Service Difficulty Reports which may be of interest.

The Regulatory Support Division (AFS-600) has established a "HomePage" on the Internet, through which the same information is available. The address for the AFS-600 "HomePage" is:

http://www.mmac.jccbi.gov/afs/afs600

Also, this address has a large quantity of other information available. There are "hot buttons" to take you to other locations and sites where FAA Flight Standards Service information is available. If you have any questions, our "E-mail" address follows.

Other requests have been received indicating a need to make the staff of this publication more available to our readers. To provide greater and more flexible access for you to offer information and ask questions, you may contact us by using any of the following methods.

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We hope this will allow you to contact us by a means which will be convenient and save some of your time. We welcome the submission of aircraft maintenance information via any form or format. This publication provides an opportunity for you to inform the general aviation community of the problems you have encountered. The Service Difficulty Reporting (SDR) program also brings the problems to the attention of those who are able to resolve the problems. Your participation in the SDR program is vital to ensure accurate maintenance information is available to the general aviation community.

FAA FORM 8010-4, MALFUNCTION OR DEFECT REPORT

For your convenience, FAA Form 8010-4, Malfunction or Defect Report, will be printed in every issue of this publication.

You may complete the form, fold, staple, and return it to the address printed on the form. (No postage is required.)

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Enter pertinent data	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER
2. AIRCRAFT			
3. POWERPLANT			
4. PROPELLER			

5. SPECIFIC PART (*of component*) CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location

6. APPLIANCE/COMPONENT (*Assembly that includes part*)

Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number

Part TT	Part TSO	Part Condition	7. Date Sub.

8. Comments (*Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.*)

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Check a box below, if this report is related to an aircraft

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